

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

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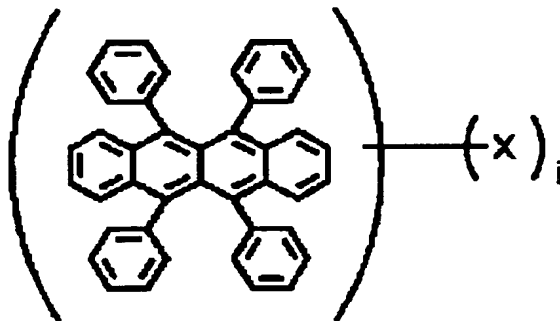
APPLICATION DATE : 14-04-97  
APPLICATION NUMBER : 09095406

APPLICANT : TOYO INK MFG CO LTD;

INVENTOR : ENOKIDA TOSHIO;

INT.CL. : H05B 33/22 C09K 11/06 H05B 33/14

TITLE : ORGANIC ELECTROLUMINESCENT  
ELEMENT MATERIAL AND ORGANIC  
ELECTROLUMINESCENT ELEMENT  
USING THE SAME



ABSTRACT : PROBLEM TO BE SOLVED: To improve luminous efficiency as well as brightness, and extend service life by applying the constitution that a cyclic organic compound is contained in the hole injection layer or the luminous layer of an organic electroluminescent element having a plurality of layers of organic compound thin films, containing at least a luminous layer and a hole injection layer between a pair of electrodes.

SOLUTION: A cyclic organic compound is expressed by the formula, and composed, for example, by the use of a naphthoquinone derivative, a Grignard's reagent and a lithiation reagent or diaryl benzoflone. Preferably, a hole injection layer is doped into an area formed with an anode, or the compound expressed by the formula is doped into the host substance of a luminous layer having an electron injection layer in an area formed with a cathode. As a result, carriers injected from the cathode are evenly recombined within the luminous layer. In the formula, (x) represents a halogen atom, a cyano group, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, a cycloalkyl group, a heterocyclic group and an amino group, and (i) represents an integer between 1 and 28.

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